EXHIBIT S

TO RULE 4.2 STATEMENT OF DR. DOUGHERTY

Recommended Mounting Methods

PC Board Observations

a. Soft or hard substrates (alumina) are typically used at microwave frequencies. For lowest reflection loss fused silica substrates are recommended at millimeterwave frequencies.

b. Micro-strip line width should match or come close to capacitor width to optimize capacitor performance. Fanning out the micro-strip line to match the capacitor width may degrade capacitor loss at millimeterwave frequencies.

Micro-strip Line Gap

Option 1: 0.015" to 0.010" (.381 mm to .254 mm) micro-strip line gap for broadband performance at microwave frequencies (example 16 kHz to 10 GHz).

Option 2: 0.005" to 0.002" (0.127 mm to 0.051 mm) micro-strip line gap for very broadband performance at millimeterwave frequencies (example 16 kHz to 40 GHz +).

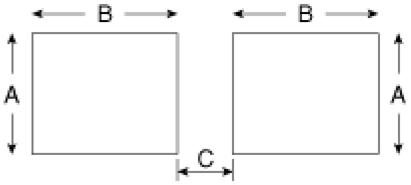
Mounting Pad Dimensions (general recommendation*)

Inches

Case Size	A min	B min	C min*
0302	0.020	0.015	0.003
0502	0.020	0.025	0.010
0603	0.030	0.030	0.015
0805	0.060	0.040	0.020

Millimeters

Case Size	A min	B min	C min*
0302	0.508	0.381	0.076
0502	0.508	0.635	0.254
0603	0.762	0.762	0.381
0805	1.524	1.016	0.508

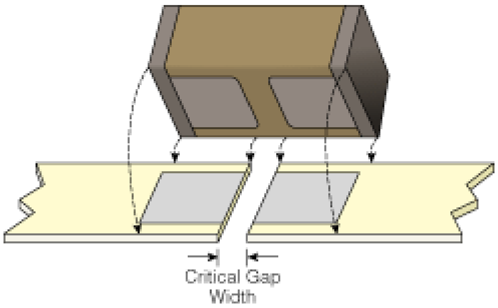


Centerline of the capacitor should be located in the center of the gap in the micro-strip line.

* Disclaimer: Gap dimension, substrate material and micro-strip line width impact circuit performance.

Consult factory for application specific recommendations.

Recommended Attachment to Substrate



a. Solder Attach (wave reflow, vapor phase or convection tunnel oven). See termination codes for guidelines.

b. Conductive Epoxy

It is recommended that both mounting pads be bonded simultaneously and that the pre-heat, soldering or curing, and post-heat temperatures be controlled.